Knot Floer homology and the four-ball genus.

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Abstract
We use the knot filtration on the Heegaard Floer complex $CF$ to define an integer for knots. Like the classical signature, this invariant gives a homomorphism from the knot concordance group to $\mathbb{Z}$. As such, it gives lower bounds for the slice genus (and hence unknotting number) of a knot; but unlike the signature, it gives sharp bounds on the four-ball genera of torus knots. As another illustration, we calculate the invariant for several ten-crossing knots.

Keywords
Floer homology, knot concordance, signature, 4–ball genus

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